

**IN THE CLAIMS:**

Please amend the claims as follows:

1 to 95. (cancelled)

96. (new) A composition comprising: (a) an enzyme possessing substantial 3' to 5' exonuclease activity, (b) a DNA polymerase, wherein the DNA polymerase has less 3' to 5' exonuclease activity than the enzyme, and (c) a factor that substantially inhibits the incorporation of undesired nucleotides or analogs thereof into a DNA polymer.

97. (new) The composition of claim 96, wherein the factor is a dUTPase.

98. (new) The composition of claim 96, wherein the factor is a thermostable dUTPase.

99. (new) The composition of claim 98, wherein the thermostable dUTPase is *Pyrococcus furiosus* dUTPase.

100. (new) The composition of claim 96, wherein the factor is a Polymerase Enhancing Factor.

101. (new) The composition of claim 98, wherein the thermostable dUTPase is a *Thermus thermophilis* dUTPase.

102. (new) The composition of claim 96, wherein the enzyme that possesses substantial 3' to 5' exonuclease activity is a thermostable proofreading DNA polymerase.

103. (new) The composition of claim 102, wherein the thermostable proofreading DNA polymerase is *Pyrococcus furiosus* DNA polymerase.

104. (new) The composition of claim 96, wherein the DNA polymerase that has less 3' to 5' exonuclease activity than the enzyme is *Thermus aquaticus* DNA polymerase.

105. (new) The composition of claim 96, wherein the DNA polymerase that has less 3' to 5' exonuclease activity than the enzyme is *Thermus aquaticus* DNA polymerase and

the enzyme that possesses substantial 3' to 5' exonuclease activity is *Pyrococcus furiosus* DNA polymerase.

106. (new) The composition of claim 96, further comprising at least one component selected from a PCR additive and a protein.

107. (new) The composition of claim 96, further comprising more than one factor that substantially inhibits the incorporation of undesired nucleotides or analogs thereof into a DNA polymer.

108. (new) A method for amplifying at least one nucleic acid comprising subjecting an amplification reaction composition comprising: (a) an enzyme possessing substantial 3' to 5' exonuclease activity, (b) a DNA polymerase, wherein the DNA polymerase has less 3' to 5' exonuclease activity than the enzyme, (c) a factor that substantially inhibits the incorporation of undesired nucleotides or analogs thereof into a DNA polymer, and (d) at least one nucleic acid to at least one cycle of amplification to amplify the at least one nucleic acid.

109. (new) The method of claim 108, wherein the method for amplifying at least one nucleic acid comprises polymerase chain reaction.

110. (new) A kit for amplifying, synthesizing, or mutagenizing nucleic acids comprising: (a) an enzyme possessing substantial 3' to 5' exonuclease activity, (b) a DNA polymerase, wherein the DNA polymerase has less 3' to 5' exonuclease activity than the enzyme, and (c) a factor that substantially inhibits the incorporation of undesired nucleotides or analogs thereof into a DNA polymer.

111. (new) The kit of claim 110, wherein (a), (b), and (c) are separate prior to use in amplifying, synthesizing, or mutagenizing nucleic acids.

112. (new) The kit of claim 110, wherein at least two of (a), (b), and (c) are combined.